(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

557695

(43) International Publication Date
2 December 2004 (02.12.2004)

PCT

(10) International Publication Number
WO 2004/105078 A2

(51) International Patent Classification[7]: H01J 37/32

(21) International Application Number:
PCT/CH2004/000300

(22) International Filing Date: 18 May 2004 (18.05.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
03405360.3 22 May 2003 (22.05.2003) EP

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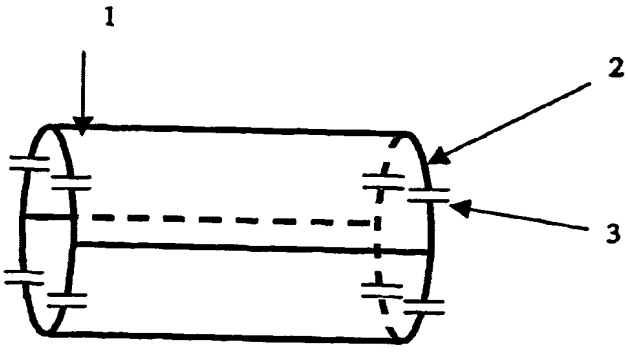
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *without international search report and to be republished upon receipt of that report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: A HIGH DENSITY PLASMA REACTOR



(57) Abstract: The high density RF plasma source of this invention uses a special antenna configuration to launch waves at frequency such as 13,56MHz. The tunability of this antenna allows to adapt actively the coupling of the RF energy into an evolutive plasma as found in plasma processings in semiconductor manufacturing. This plasma source can be used for the following applications : plasma etching, deposition, sputtering systems, space propulsion, plasma - based sterilization , plasma abatement systems. In another embodiment, the plasma source is in conjunction with one or several process chambers , which comprise an array of magnets and RF coils too . These elements can be used, on one hand, for plasma confinement or the active plasma control (Plasma rotation) thanks to feedback control approach , and one the other hand, for in situ NMR Monitoring or analysis such as moisture monitoring inside a process chamber , before or after the plasma process, or for in situ NMR Inspection of wafers or others workpieces.

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